ICARDA
Science for resilient livelihoods in dry areas

CGIAR

R4D INITIATIVE

OPPORTUNISTIC GRAZING: AN EFFICIENT TOOL FOR ENHANCING RANGELAND HEALTH

© Mounir Louhaichi (ICARDA)

SUMMARY

Opportunistic grazing refers to the practice of allowing livestock to graze on available forage when conditions are favorable. By implementing strategies of opportunistic grazing, rangeland managers can effectively use opportunistic grazing as a sustainable rangeland management tool to improve forage use, enhance ecosystem health, and support livestock production goals.

BACKGROUND

Many grazing systems can be used to accomplish specific tasks ranging from high-intensity, short-duration grazing to low-intensity, season-long grazing. What they all have in common is that they attempt to use grazing animals to manipulate vegetation in a way that benefits the land manager. This is achieved through using animals as a tool to create a disturbance in the landscape. This disturbance affects the competitive balance between plant species and can be used to shift plant communities toward a desired state. Using grazing animals to create a vegetation response is often more cost-effective and less damaging to the environment than using alternative methods such as long periods of protection, planting, seeding, or mechanical treatments. By understanding the plant-animal dynamics involved, managers can learn to use different grazing strategies to produce specific results. This can be key to successful long-term vegetation management on a rangeland. Opportunistic grazing is a term coined by Westoby et al. (1989) to describe the timing of grazing dictated by climate variability, which creates diverse and unpredictable forage availability. By definition, opportunistic grazing is a strategy that offers flexibility in the timing and intensity of livestock grazing in response to spatial and temporal heterogeneity in forage availability created by climatic variability.

▶ Biomass abandance during favorable years

© Mounir Louhaichi (ICARDA)

IMPORTANCE OF OPPORTUNISTIC GRAZING IN DRY RANGELANDS

In arid rangelands, characterized by infrequent rainfall and sparse vegetation, opportunistic grazing emerges as a vital tactic for the survival of livestock. This strategy entails allowing animals to briefly graze on patches experiencing rapid growth of nutrient-rich vegetation following sporadic rainfalls. Harnessing this fleeting period of abundant forage fosters animal health and alleviates strain on permanent grazing grounds. Moreover, opportunistic grazing aids in the management of rangelands by mitigating overgrazing in established zones and promoting a more balanced distribution of grazing pressure. By adapting to the unpredictable conditions of dry environments, opportunistic grazing presents a sustainable approach to rangeland use while safeguarding the welfare of livestock.

BENEFITS OF OPPORTUNISTIC GRAZING

Opportunistic grazing, where herds are allowed to graze on high-quality forage during periods of rapid plant growth, can be beneficial for both livestock and rangelands. Animals can consume nutritious young plants, leading to improved weight gain and overall health. For the land, this focused grazing period allows perennial species a chance to recover after grazing, promoting healthier and more diverse rangelands in the long run.

- Improved livestock nutrition: Opportunistic grazing allows animals to access high-quality, nutritious forage during periods of peak plant growth. This leads to better weight gain, milk production, and overall animal health.
- Enhanced rangeland health: By concentrating grazing pressure for a short period, opportunistic grazing allows plants to recover during the rest of the grazing cycle. This promotes long-term health and diversity of the rangeland ecosystem.
- Reduced soil compaction: Shorter grazing periods minimize the time livestock spend on the land, reducing soil compaction from trampling. This improves soil health and water infiltration.
- Controlled brush encroachment: Opportunistic grazing during times of rapid plant growth can help control unwanted brush and woody plants. Selective grazing by livestock favors desirable grasses and forbs.
- Flexibility for pastoralists: This grazing method allows pastoralists to adjust grazing strategies based on seasonal conditions. They can take advantage of flushes of new plant growth to support livestock needs.
- Reduced need for supplementation: With access to high-quality forage during opportunistic grazing periods, livestock may require less supplemental feed, lowering costs for pastoralists.
- Potential for higher stocking rates: For short durations, opportunistic grazing can accommodate higher livestock densities on rangeland without harming the vegetation.

- Promotes efficient water use: By grazing during periods of higher moisture availability, livestock can use the water content of fresh plants, reducing their overall water needs.
- Carbon sequestration: Properly managed grazing systems can contribute to carbon sequestration, as rangelands can store carbon in both aboveground biomass and soil organic matter. This can help mitigate climate change by reducing atmospheric carbon dioxide levels.

▶ Sheep herd dispersed freely across the pasture selecting most desirable palatable species © Mounir Louhaichi (ICARDA)

IMPLEMENTATION OF OPPORTUNISTIC GRAZING

Opportunistic grazing mimics natural herbivore behavior by allowing livestock to exploit temporary flushes of forage growth. Implementation requires monitoring pasture conditions. When high-quality forage appears in a given area, like after a considerable rain shower, animals are moved to graze there for a short period. This maximizes their intake of nutritious food while promoting pasture diversity by preventing overgrazing in designated areas.

▶ Vegetation sampling for estimating carrying capacity. © Mounir Louhaichi (ICARDA)

- Flexible grazing management: This involves adapting grazing practices according to the condition of the pasture, weather, and the nutritional needs of the animals. Grazing periods and intensities are adjusted based on factors such as forage growth rates, weather patterns, and animal stocking rates.

▶ Flock of sheep grazing tightely together as they move across the landscape © Mounir Louhaichi (ICARDA)

- Rotational grazing: Rotational grazing involves dividing the grazing area into smaller paddocks or pastures and rotating the animals through these areas. This strategy allows for better forage use, prevents overgrazing in specific areas, and promotes even distribution of manure which can improve soil fertility.
- Stocking density management: Controlling the time and period of grazing in a particular area is crucial to prevent overgrazing and maintain the health of the pasture. The grazing period should be adjusted based on forage availability, seasonal changes, and animal nutritional requirements.
- Leave residual forage: Allow enough plant material to remain ungrazed for healthy regrowth and soil protection.
- Rest and recovery periods: Implementing rest and recovery periods for pastures allows vegetation to regrow and replenish its nutrient reserves. By rotating animals between different grazing areas and providing rest periods, the quality and quantity of forage available to animals can be improved, leading to better overall pasture health.
- Monitoring and observation: Regular monitoring and observation of rangeland conditions, forage availability, and animal behavior are essential components of opportunistic grazing. Managers need to assess vegetation growth, monitor animal performance, and adjust grazing management accordingly to ensure optimal use of available resources

ACKNOWLEDGEMENTS

We would like to thank all the Funders who support this innovation through their contributions to the **CGIAR Trust Fund (www.cgiar.org/funders)**. Additional bilateral investment for this innovation has been provided by the Livestock and Climate initiative, DGF, OEP, PRODEFIL and GDA El Daher.

FOR MORE INFORMATION:

Mounir Louhaichi (ICARDA - Tunisia): M.Louhaichi@cgiar.org

HOW TO CITE:

Louhaichi, M., Gamoun, M. 2024. Opportunistic grazing: An efficient tool for enhancing rangeland health. Innovation Brief. Tunis, Tunisia: International Center for Agricultural Research in the Dry Areas (ICARDA).

ICARDA
Science for resilient livelihoods in dry areas

CGIAR

FURTHER READING

Costa Jr, C., Escudero, A., Flintan, F., Garrity, D., Gill, B., Haddad, F., Howell, D., Itzkan, S., Louhaichi, M., M., Magero, C., Milne, E., Neely, C., Niamir-Fuller, M., Schwartz, J., Sharpe, N., Shenton, R., Thidemann, K., Worms, P. 2022. **Regenerative grazing for climate, ecosystem, and human health.** https://hdl.handle.net/10568/125779

Louhaichi, M., Gamoun, M., Ben Salem, F., Ouled Belgacem, A.**Rangeland Biodiversity and Climate Variability: Supportingthe Need for Flexible Grazing Management.** Sustainability, 13 (13). https://hdl.handle.net/20.500.11766/13291

Derner, J. D., Budd, B., Grissom, G., Kachergis, E. J., Augustine, D. J., Wilmer, H., Ritten, J.P. 2022. **Adaptive Grazing Management in Semiarid Rangelands: An Outcome-Driven Focus.** Rangelands 44(1): 111–118. https://doi.org/10.1016/j.rala.2021.02.004

Louhaichi, M., Gamoun, M., Gouhis, F. 2021. **Benefits of Short-Duration, High-Stocking Rate Opportunistic Grazing on Arid Rangelands During Favorable Conditions.** Frontiers in Ecology and Evolution 9: 757–764. https://hdl.handle.net/20.500.11766/66517

Louhaichi, M., Gouhis, F., Gamoun, M. 2019. **A Lexible Approach to The Restoration of Degraded Rangelands.** Beirut, Lebanon: International Center for Agricultural Research in the Dry Areas (ICARDA). https://hdl.handle.net/20.500.11766/10498

Louhaichi, M. 2020. **Managing Rangelands: Promoting Sustainable Rangeland Management Practices-Grazing Management for Improving Soil Stability, Plant Health and Ecosystem Integrity.** Lebanon: International Center for Agricultural Research in the Dry Areas (ICARDA). https://hdl.handle.net/20.500.11766/66517

Westoby, M., Walker, B., Noy-Meir, I. 1989.**Opportunistic Management for Rangelands Not at Equilibrium.** Rangeland Ecology & Management /Journal of Range Management Archives, 42(4): 266-274.

Louhaichi, M., Gamoun, M. 2024. **Opportunistic Grazing: An Efficient Tool for Enhancing rangeland health.** Tunis, Tunisia: International Center for Agricultural Research in the Dry Areas (ICARDA).

The **CGIAR Research Initiative on Livestock and Climate** is designed to address the challenges that climate change poses to livestock production, providing livestock-keeping communities with the support they need without accelerating greenhouse gas emissions or degrading land, water, and biodiversity.